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EXAMINER	
MERKLING, MATTHEW J	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,058	ALBRODT ET AL.	
	Examiner	Art Unit	
	MATTHEW J. MERKLING	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21, 24, 27-30, 34 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Ruoff et al. (WO 01/24294 with English language equivalent US 7,044,160).

Regarding claims 21, 24 and 40, Ruoff discloses a reforming system for a fuel cell, the system comprising:

an evaporating device (4, col. 4 lines 10-11) for evaporating a raw fuel and for delivering the evaporated raw fuel to a reforming unit (10),

at least two pumps (29 and 30) for conducting fuel to the evaporating unit and for precisely metering the raw fuel that is conducted into the evaporating device,

a control unit (24),

said at least two pumps including at least one metering pump (29 or 30) whose rpm is regulated by means of the control unit (col. 6 lines 24-27) so as to precisely meter the quantity of raw fuel which is delivered to the evaporating device; and

at least one monitoring device (27 or 28) serving to monitor the metered quantity of the raw fuel which passes through the at least one regulated metering pump (col. 6 lines 12-17).

Regarding limitations recited in claims 24 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Regarding claim 27, Ruoff discloses the monitoring device is a pressure sensor (27), which measures the pressure in the evaporating device (outlet of the pump, col. 5 lines 22-30).

Regarding claim 28, the monitoring device monitors the current consumption of the at least one pump is an operational condition and not a structural limitation. It is noted that apparatus claims cover what a device is, not what a device does. See MPEP 2114. The manner of operating the claimed apparatus is not a patentable distinction over the prior art apparatus, therefore the claims read upon Ruoff.

Regarding claim 29, Ruoff discloses the monitoring device is a flow sensor (28), which detects the flow out of the pump into the evaporating device (col. 5 lines 22-30).

Regarding claim 30, Ruoff discloses the monitoring device is an rpm sensor, which measures the rpm of the at least one pump (col. 3 lines 18-23).

Regarding claim 34, Ruoff discloses a method for regulating the metering quantity of a metering pump in a reforming system of claim 21, wherein the metering quantity (pressure or flow rate) serves as a controlled variable, and a characteristic delivery curve of the metering pump (rpm vs. controlled variable) is stored in memory in the control unit (24), which characteristic delivery curve indicates a set-point value for the metering quantity as a function of the rpm of the metering pump (inherent, as controller makes adjustments to rpm based on controlled variable, col. 3 lines 18-23) and varies the rpm as necessary to control the controlled variable.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 22, 23, 25, 26, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruoff et al. (WO 01/24294 with English language equivalent US 7,044,160) as applied to claims 21 and 24 above, as evidenced by Riple (US 4,208,871).

Regarding claims 22, 23, 25 and 26 Ruoff, as discussed above, does not explicitly disclose that the either of the pumps are electric pumps. However, it would have been obvious to one of ordinary skill to use an electric pump in said reforming system, as electric pumps are commonly used in the art, especially for metering pump applications (see, for example, US 4,208,871, claim 8).

Regarding claims 31, Ruoff discloses the metering quantity in a fuel pump in the reforming system, as discussed in claim 21, comprising the steps of ascertaining a variable with the monitoring device (pressure or flow rate, col. 5 lines 22-30), which variable serves as a controlled variable for the regulation, and utilizing an rpm sensor to determine the rpm of the fuel pump (col. 3 lines 18-23) as a controlling variable for the regulation, the rpm being set by means of a timing module (rpm sensor is inherently a timing module, rotations per minute).

Ruoff, however, does not explicitly disclose that the metering pump is an electric pump. However, it would have been obvious to one of ordinary skill to use an electric pump in said reforming system, as electric pumps are commonly used in the art, especially for metering pump applications (see, for example, US 4,208,871, claim 8).

Regarding claim 32, Ruoff discloses the step of ascertaining a variable comprises measuring the pressure with a pressure sensor (27), which pressure

serves as a controlled variable for the regulation (col. 3 lines 18-23 and col. 5 lines 22-23).

5. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ruoff et al. (WO 01/24294 with English language equivalent US 7,044,160) in view of McArthur (US 6,209,309) as evidenced by Riple (US 4,208,871).

Regarding claim 33, Ruoff teaches utilizing an rpm sensor to determine the rpm of at least one metering pump (as discussed above) and comparing a characteristic curve (inherent by regulation of rpm with respect to outlet flow or pressure, as discussed above) to the load state (rpm) stored in memory (col. 2 lines 53-61). Ruoff, however, does not explicitly disclose the pulse width ratio of the trigger signal of the timing module serves as a controlling variable, and varying the rpm as a controlled variable by way of the pulse width ratio of the trigger signal of the timing module.

McArthur teaches pulse width modulated fuel flow control to meter a fluid flow of a pump determined by timing periods that the valve is open during each cycle (col. 1 lines 10-20), and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ruoff with McArthur for the purpose to provide a fuel flow control that is low cost and an efficient method of fuel control (col. 1 lines 51-55).

6. Claims 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruoff et al. (WO 01/24294 with English language equivalent US 7,044,160) in view of Escobar (US 5,780,729) as evidenced by Eberspach et al. (US 2002/0119408).

Regarding claims 35 and 39, Ruoff teaches a method for monitoring a metering pump (21) in a reforming system used in a motor vehicle (col. 1 lines 15-24), but does not explicitly disclose comprising outputting a warning signal by means of a drive-information system upon a deviation of a variable, ascertained by the monitoring device, from a set-point value.

Escobar teaches a fuel delivery system wherein a warning signal is issued when an error occurs in the fueling system for example flow metering 8 (measured by a flow sensor) (col. 6 lines 56-59), and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Ruoff to include a warning signal when error in operation of fueling system occurs for the obvious purpose to provide a warning to unsafe fueling conditions.

Regarding claim 36, the warning signal of Ruoff, as modified by Escobar, is output by the driver-information system if a monitoring device for monitoring the current consumption of the metering pump (8, Fig. 1) detects that a defined maximum or minimum current limit has been exceeded or undershot for longer than a defined length of time (col. 5 line 6 – col. 7 line 4).

Regarding claim 37, Ruoff in view of Escobar teach all of the limitations as applied to claim 35 above but is silent to wherein the a warning signal is output by a driver-information system if the rpm of the metering pump, measured by the

rpm sensor, deviates from the set-point value. However such modification would merely be utilizing a value determining arrangement to sense the operating state based on rpm of pump as opposed to flow and would have been an obvious control variable modification to one of ordinary skill in the art at the time of the invention (See Eberspach et al., US Pub. 2002/0119408 at [0010]).

Regarding claim 38, Ruoff teaches all of the limitations as applied to claim 34, but does not explicitly teach outputting a warning signal by a driver-information system if the metering quantity measured by a flow sensor deviates from its set-point value. Escobar teaches a fuel delivery system wherein a warning signal is issued when an error occurs in the fueling system for example flow metering 8 (measured by a flow sensor) (col. 6 lines 56-59), and it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Ruoff to include a warning signal when error in operation of fueling system occurs for the obvious purpose to provide a warning to unsafe fueling conditions.

Response to Arguments

7. Rejection of claims 24-26 and 33 under 35 USC §112 2nd paragraph is withdrawn in light of the amendments.

8. Applicant's arguments filed 3/13/08 have been fully considered but they are not persuasive.

On page 7, Applicant argues that Ruoff has no teaching of a pump whose rpm is regulated by means of the control unit. The examiner respectfully disagrees, as cited above, Ruoff does indeed teach controlling the rpm of the pump to control the fluid flow (col. 3 lines 18-23). Furthermore, Ruoff explicitly illustrates communication between the control device and the pump (see Figs. 2 and 3).

Applicant also states on page 7 that Ruoff does not teach a second pump. The examiner respectfully disagrees. Fig. 3 of Ruoff clearly discloses the use of two pumps (29 and 30).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. MERKLING whose telephone number is (571)272-9813. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. M./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795